

application serial number 09/690,959. The first paragraph on page 1 of U.S. Patent application serial number 09/723,757 incorporates U.S. Patent Application serial number 09/690,959 by reference. Paragraph [0051] of the current application incorporates U.S. Patent Application serial number 09/723,757. Accordingly, no new matter has been added.

Rejection of Claims 1-34 under 35 USC 103(a)

Independent Claim 1 and 22 are amended to specify employing the etching medium to form one or more waveguide surfaces to a smoothness less than 220 nm. Additionally, Independent Claim 1 is amended to specify that the etching medium includes components from Claim 6 and Independent Claim 22 is amended to specify that the etching medium includes components from claim 26.

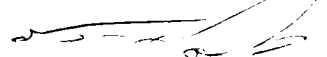
Claims 1-39 stand rejected over various combinations of U.S. Patent 4,776,661 (Handa), U.S. Patent 5,874,362 (Wong), U.S. Patent 6,235,214 (Deshmukh) and U.S. Patent Application 2001/0001652 (Kanno). None of these references teach using the specified etching medium compositions to form waveguide surfaces having a smoothness less than 220 nm. As a result, these amendments have placed the Application in condition for allowance.

CONCLUSION

In light of the Amendments and arguments set forth above, Applicants believe they are entitled to a letters patent. The Examiner is encouraged to telephone the undersigned with any questions.

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Respectfully submitted



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VERSION WITH MARKINGS SHOWING CHANGES MADE

IN THE SPECIFICATION

Please amend paragraph [0004] as follows:

The amount of scattering at a surface increases as the roughness of the surface increases. The sidewalls of a waveguide are often formed by etching an optical component according to the Bosch process. The Bosch process employs alternating application of a passivant and an etchant. The alternating steps of the Bosch process result in sidewalls with an undesirably high level of roughness. For instance, the Bosch method typically provides a roughness of about 220 nm.

IN THE CLAIMS

1. (Amended) A method of forming an optical component, comprising:

forming a mask over a light transmitting medium so as to protect a region of the light transmitting region where a waveguide is to be formed; and

applying an etching medium to the light transmitting medium so as to form one or more waveguide surfaces [of the waveguide] with a smoothness less than 220 nm, the etching medium including a fluorine containing gas and one or more partial passivants selected from the group consisting of SiF₄, C₄F₈, CH₂F₂ and CHF₃.

6. (Amended) The method of claim 1, wherein the partial passivant is selected from a group consisting of [HBr, SiF₄,] C₄F₈ [, CH₂F₂] and CHF₃.

22. (Amended) A method of forming an optical component, comprising:

obtaining an optical component having a light transmitting medium positioned over a base; and

applying an etching medium to the light transmitting medium so as to form [at least one surface of a waveguide in the light transmitting medium] one or more waveguide surfaces with a smoothness less than 220 nm, the etching medium including [a fluorine containing gas and] one

or more partial passivants and a fluorine containing gas selected from a group consisting of Si_2F_6 and NF_3 .

23. (Amended) The method of claim 22, wherein the [fluorine containing gas includes SF_6 and] the partial passivant includes CHF_3 .

24. (Amended) The method of claim 22, wherein [the fluorine containing gas includes SF_6 and] the partial passivant includes C_4F_8 .

26. (Amended) The method of claim 22, wherein the fluorine containing gas [is selected from a group consisting of SF_6 , CF_4 , Si_2F_6 and] includes NF_3 .